Cd and Cr+6 Uses on Stryker Family of Vehicles

Presented by:
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# Cd and Cr+6 Uses on Stryker Family of Vehicles

**Performing Organization Name(s) and Address(es):**

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**Abstract:**

SERDP/ESTCP Metal Finishing Workshop, May 22 - 23, 2006, Washington, DC. Sponsored by SERDP/ESTCP.

**Distribution/Availability Statement:**

Approved for public release; distribution unlimited
Stryker Family of Vehicles

<table>
<thead>
<tr>
<th>SBCT</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infantry Carrier Vehicle</td>
<td>108</td>
</tr>
<tr>
<td>Mortar Carrier</td>
<td>36</td>
</tr>
<tr>
<td>Reconnaissance</td>
<td>48</td>
</tr>
<tr>
<td>Engineer Squad</td>
<td>9</td>
</tr>
<tr>
<td>Fire Support</td>
<td>13</td>
</tr>
<tr>
<td>Commander's</td>
<td>39</td>
</tr>
<tr>
<td>Medical</td>
<td>17</td>
</tr>
<tr>
<td>Antitank Guided Missile (ATGM)</td>
<td>9</td>
</tr>
<tr>
<td>NBCRV</td>
<td>3</td>
</tr>
<tr>
<td>Mobile Gun Systems (MGS)</td>
<td>27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>309</strong></td>
</tr>
</tbody>
</table>
Environmental Management

• PMO Stryker BCT formally handles ESOH issues as part of its Environmental Hazard Management Program (EHMP) and Stryker System Safety Working Group.

• The Stryker EHMP assists PMO Stryker BCT in managing potential and known environmental hazards associated with the Stryker FoV
  – Identifying hazards
  – documenting and tracking hazards
  – reducing if not eliminating hazards

• The EHMP is based upon MIL-STD-882.
Environmental Management (Cont’d)

• In order to encompass expertise outside of PMO SBCT, PM SBCT established the Stryker Environmental Management Team (Stryker EMT) to assist with the EHMP.

• PM SBCT EMT consists of representatives from:
  – PMO SBCT Divisions
  – Prime contractor
  – ASA(ALT) Environmental Support Office
  – Army Environmental Center
  – Army Research Laboratory
  – Fielding/Test Installations
  – Other DA Organizations

• This collection of expertise enables PMO SBCT to concurrently incorporate perspectives and input regarding:
  – Pollution prevention opportunities
  – Resolve known and previously unknown environmental issues associated with the Stryker FoV manufacture, operation, maintenance, and demilitarization/disposal
Contractual Requirements

- The Stryker production and logistics contracts require the Government's approval for use of Cadmium, Hexavalent chromium, highly toxic or carcinogenic materials.

- PMO SBCT requires the prime contractor to obtain a waiver in order to use Hexavalent chromium, Cadmium, and Beryllium.

- The waiver specifies why the hazardous material is required, where it will be used, and efforts underway to eliminate the material’s use.
Other Cd and Cr+6 Elimination Drivers

- US and international regulations regarding Cr+6 and Cd have driven the need to identify and implement alternative materials.
  - U.S. OSHA Permissible Exposure Levels for Cd and Cr+6
  - U.S. EPA listing Cr+6 and Cd as RCRA wastes and HAPs
Eliminated Uses of Cr+6 and Cd

• Uses of Cr+6:
  – DoD-P-15328 wash primer
  – Chromic acid rinse on ferrous parts that are zinc phosphated
  – Chromate conversion coating per MIL-DTL-81706B on non-threaded zinc plated components
  – Chromate conversion coating per MIL-DTL-81706B on non-electrical aluminum parts

• Uses of Cd:
  – Cadmium plated hardware and fasteners
Remaining Uses of Cr+6 and Cd

- Remaining uses of Cr+6 occurs on:
  - Fasteners (ASTM B633)
  - Surfaces requiring electrical conductivity (MIL-DTL-81706B Class 3)
  - Electrical connectors (MIL-DTL-81706B Class 3)

- Remaining uses of Cd occurs on:
  - Electrical connectors (QQ-P-416)
Barriers

• Stryker FoV prime contractor reluctant to use alternative materials unless:
  – Alternative materials specified by a military spec./standard or QPL
  – Contractually directed by PMO Stryker BCT

• Alternative materials used by commercial industries are available, but these materials are not validated for military use.
Remaining Needs

1) Replacement for Cr+6 uses on mechanical fasteners and aluminum components that require electrical conductivity

2) Replacement for Cd plating on electrical connectors

3) Metal pretreatment for high hard steel

4) Qualification of existing commercial alternative materials for military applications
Questions?

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